

IN THE CLAIMS

1. (Currently Amended) A method of manufacturing a semiconductor device comprising ~~the steps of:~~

~~forming a semiconductor film on a substrate and then~~ growing spherical or hemispherical grains on ~~the surface of the~~ a semiconductor film;

diffusing an impurity product to the grains ~~grown on the surface of the semiconductor film;~~

removing the impurity product, ~~which is generated in the step of diffusing the impurity,~~ from ~~the surface of the semiconductor film~~ using a ~~non-etching~~ first cleaner selected from the group consisting of: 1) hot water, 2) a mixed solution of water, hydrochloric acid and hydrogen peroxide, and 3) a mixed solution of sulfuric acid and hydrogen peroxide; and

removing native oxide on the semiconductor film ~~after the step of removing the impurity product~~ using a second cleaner.

2. (Currently Amended) A method of manufacturing a semiconductor device as claimed in claim 1 ~~A semiconductor device as claimed in claim 1~~, wherein the semiconductor film is formed of a silicon material and phosphorus or arsenic is used as the impurity product.

3. (Original) A method of manufacturing a semiconductor device as claimed in claim 1, wherein deionized water is used for the hot water.

4. (Currently Amended) A method of manufacturing a semiconductor device as claimed in claim 1, wherein the temperature of the hot water lies within the range of 30°C to 80°C.

5. (Currently Amended) A method of manufacturing a semiconductor device as claimed in claim 1, wherein the semiconductor film which contains the impurity product and the grains ~~are formed thereon~~ is ~~are~~ used as one of electrodes of a capacitor.

Claims 6-7 (Canceled)

8. (Currently Amended) A method of manufacturing a semiconductor device as claimed in claim 7 1, wherein the native oxide is removed using a mixed solution of hydrofluoric acid and deionized water.

Claims 9-10 (Canceled)

11. (Previously Presented) A method of manufacturing a semiconductor device as claimed in claim 5, wherein the capacitor is a cylindrical capacitor.

12. (New) A method of manufacturing a semiconductor device comprising:
removing an impurity product from spherical or hemispherical grains formed on a semiconductor film using a first cleaner selected from the group consisting of: 1) hot water, 2) a mixed solution of water, hydrochloric acid and hydrogen peroxide, and 3) a mixed solution of sulfuric acid and hydrogen peroxide; and
removing native oxide from the semiconductor film using a second cleaner.

13. (New) A method of manufacturing a semiconductor device as claimed in claim 12, wherein the semiconductor film is formed of a silicon material and phosphorus or arsenic is used as the impurity product.

14. (New) A method of manufacturing a semiconductor device as claimed in claim 12, wherein deionized water is used for the hot water.

15. (New) A method of manufacturing a semiconductor device as claimed in claim 12, wherein the temperature of the hot water lies within the range of 30°C to 80°C.

16. (New) A method of manufacturing a semiconductor device as claimed in claim 12, wherein the semiconductor film which contains the impurity product and the grains formed thereon are used as one of electrodes of a capacitor.

17. (New) A method of manufacturing a semiconductor device as claimed in claim 16, wherein the capacitor is a cylindrical capacitor.

18. (New) A method of manufacturing a semiconductor device as claimed in claim 7, wherein the native oxide is removed using a mixed solution of hydrofluoric acid and deionized water.

19. (New) A method of manufacturing a semiconductor device as claimed in claim 12, wherein the removing of the native oxide is after the removing of the impurity product.